

EUROPEAN UNIVERSITY INSTITUTE, FLORENCE

DEPARTMENT OF ECONOMICS

E U I W O R K I N G P A P E R No. 23

INFLATION AND STRUCTURAL CHANGE
IN THE EURO-DOLLAR MARKET

by

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AUGUST 1982



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I must express my gratitude to Don Hester and René Higonnet, who read an earlier draft of this paper and made many extremely useful comments.

This paper was presented at the International Economic Association Conference on "Monetary Theory and Economic Institutions" held at the European University Institute in September 1982.

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Printed in Italy in September 1982

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1. Several people, including the Swiss Banking Corporation (1), have in recent times undertaken the task of inquiring whether the Euro-dollar market contributes to world inflation. This activity, of course, presupposes that the theoretical and empirical problem of whether an expansion of the money supply leads to inflation has already been solved, in the sense of establishing a positive correlation between increases in the money supply and price increases, and of knowing the direction and the parameters of that correlation. Granted that this correlation has been found theoretically, the problem then becomes one of proving it empirically, and that involves deciding what particular magnitude must be defined as the "world price level". After this practical problem has been satisfactorily coped with, it is necessary to consider whether Euro-dollar deposits can be called "money" and, if that much can be said about them, it must be decided what is the relevant aggregate of deposits that must be called "Euro-dollar deposits". When that is done, the remaining part of the job is to prove that Euro-dollar deposits contribute to world inflation. Finally, it is relevant to establish whether Euro-dollar deposits contribute significantly to world inflation.

From the above description, it is evident that the task to be undertaken is a formidable one. It begins with a theoretical problem, the solution of which can be said to have been satisfactorily obtained only by people who take a rather cavalier approach to economic analysis. A lot of ultra-monetarist

(1) In a Report written for "Prospects", a journal published by the Swiss Banking Corporation, and quoted in the International Currency Review, vol. 10, n. 1, p. 26.

statements or, for that matter, of ultra-non-monetarist statements, which, respectively, affirm the existence of a clear causal link between money supply and price rises, or, equally firmly, negate any such link, have had that nature. What the state of the art warrants, after such a long number of years have elapsed since the beginning of the efforts to establish a link between these magnitudes, in the form, what is more, of a distinct causal relationship is, unfortunately, no more than a very weak statement of causality. We cannot deny that money supply changes have some effect on price changes, but neither can we deny the opposite. Anything stronger than that would not be a fair summing up of the present state of the art ⁽²⁾.

Much the same can be said of the international version of monetarism, which goes under the name of "monetary approach to the balance of payments". While it is necessary to attribute to its proponents the merit of having brought back into the focus of analysis the importance of money flows among countries, which may affect the balance of payments just as much as trade flows, may precede them, may take place in a direction and according to determinants again not warranted by the state of the art; the Monetary Approach has not proved to be an alternative approach to balance of payments theory. It has reminded us of important phenomena to be included in our analysis, which had been largely overlooked by previous theories. But it is no substitute for them ⁽³⁾.

(2) See, for all, T. Mayer, The structure of Monetarism.

(3) The monetary theory of the balance of payments may be, however, considered historically the first explanation of balance of payments dynamics. It was certainly present in the writings of Ferdinando Galiani, as F. Cerarano points out in his Monetary Theory in F. Galiani "Della Moneta" in History of

In this paper I could not possible begin to explore whether there is an important, unidirectional, and measurable link between rises in the money supply and price rises. I would run into the same difficulties that have beleaguered previous attempts in this direction. I propose therefore to reduce my task to the more manageable one of considering whether Euro-dollar deposits have been or can be a cause of inflation of the world money supply. In fact, in its original meaning, the word "inflation" described exclusively an increase in the supply of money, and not a process of rising prices.

It will then be up to anyone to make up his mind on the link between money and prices, once it has been established whether the rise of the Euro-dollar market can be counted as a cause of inflation of the world money supply.

Although there is no dearth of papers written to prove or disprove the connection between the Euro-dollar market and price inflation, most of the better quality research has been in the last decade or so, directed to prove or falsify the existence of a link between the Euro-dollar market and money supply inflation. The questions asked, in other words, have been: "Do Euro-dollar deposits constitute a new and net addition to world bank deposits?" and "Is the world money supply larger, because of the existence of Euro-dollar deposits, than what it would have been in the case there had been no Euro-dollar deposits?".

(3) cont'd. Political Economy, 8.3.1976. It was reiterated after the Ricardian onslaught, by J.S. Mill, Knut Wicksell (who got it from H. Thornton) and by the so-called Dutch School. About the last, see A. Selden's article, "A critique of Dutch Monetarism" in Journal of Monetary Economics, 1975, and the reply it elicited from Manuel Guitian, Ibid., 1977.

It must be affirmed, first of all, that there is little theoretical content in this inquiry. It must necessarily be largely based on a correct understanding of an institutional reality which has been the subject of frequent changes, and whose main features have remained, for the whole period, shrouded in relative obscurity to most economists outside the banking world.

What theoretical arguments might precede the institutional treatment that is most appropriate to deal with Euro-dollar problems I am going to go into in a few moments. It is, in fact, almost impossible to get started without, first of all, reminding the reader of how the Euro-dollar market came about, in the 1950's and 1960's.

It will have been noticed by now that I have kept using the word "Euro-dollar" as a substitute for the word "Euro-currency", which other writers have deemed more correct to use. I have done so, and I propose to continue to do so in the rest of this paper, for the very good reason that the share of other "Euro-currencies" does not seem to have increased, from the inception of the market to the present day. It has been hovering about 20% of the total Euro-currency market for the last ten years, while the Euro-dollars have firmly kept about 80% of this very fast-growing market. It will also have been noted, by now, that I have been using the expression "Euro-dollar market" as a substitute for the expression "international financial market". I have done so, and am going to do so for the rest of this paper, for the very good reason that there does not seem to be (if we exclude Eurobonds, which are related to Euro-dollars anyway) any other important form of international financial market left to consider, whose existence and operation can be considered auto-

nomous from the Euro-dollar market.

2. The Euro-dollar market is the product of the Bretton Woods system. The international payments system was rebuilt, after the second world war, as a fixed exchange rate system, where, however, parity changes were permitted but only as a result of what the IMF Articles of Agreement defined as "fundamental disequilibria". At the insistence of the United States, no institution was created to perform the role of world central bank (against the better advice of J.M. Keynes). As a result, the dollar was, in practice, ratified as world reserve currency and almost sole supplier of international liquidity. Again at the insistence of the U.S., other very important features of the Keynes and White Plans were deleted from what became the final IMF Charter. A vital exclusion was that of bilateral capital controls of international private short-term capital flows. Both Keynes and White (especially the latter) had made it quite clear that the efficient working of the international economic system would be put in serious jeopardy, after the war, if short-term private capital flows were to be allowed back into the system. They had inserted into their Plans clauses which compelled the countries receiving the flows to reject them, and recycle them back to the countries of provenance. This obligation disappeared from the final draft and control over short term capital flows became the exclusive concern of the countries losing capital (which were, moreover, not compelled, but only allowed to control them), thus assuring the ineffectiveness of any except the most savage unilateral controls ⁽⁴⁾.

(4) For a more detailed analysis of that period, see M. de Cecco, "The Origins of the Post War Payments System", in Cambridge Journal of Economics, March 1979.

The problem of short term capital flows control, however, is one of the nastiest ones to beleaguer the management of the international economy. In the last decade, for instance, we have had a shining example of how uncoordinated control of short term capital flows, exercised by both the losing and the receiving country, can be extremely deflating⁽⁵⁾.

There were other diktats of the American, which gave the post-war international monetary system some of the features which later induced the growth of the Euro-dollar market. Very important to our story was, for instance, United States insistence, in 1948 and 1949, that European currencies be devalued, to be able to generate exports from the European economies. The pressure in this direction was brought to bear especially on the U.K. and when the U.K. authorities, who had begun by having a completely different outlook on post-war financial problems and on the way to solve them, finally gave in and devalued Sterling by 30% in November 1949, they were followed by 25 other countries, including all the most important ones. This wave of devaluations meant that, technology differentials not being very large between the U.S. and other industrial countries, and wage differentials being, on the other hand, quite substantial, the new, post-1949 parity structure induced, as the U.S. authorities had hoped, the reconstruction of European economies on an export-led basis. The institutionalization of U.S. official foreign aid and the maintenance of the U.S. defense budget at wartime levels, the construction and operation

(5) In the early 1970's, the US had established a full panoply of controls over capital outflows, and Germany had a similarly impressive battery of controls over capital inflows at work. This does not seem to have meant more than a systematic dodging of the US controls, while the German ones were more forceful. The end result, however, was that capital flowing out of the

of a chain of U.S. military bases overseas, meant that there was ample provision of international liquidity in the form of dollars throughout the 1950's and 1960's, to accommodate and perhaps even foster, the phenomenal growth of international trade in the same period.

The growth of world trade consistently exceeded the growth of G.N.P. in most countries. Trade, as is known, was concentrated among the industrial countries. This meant the growth, in those countries, of powerful export lobbies, opposed to currency up-valuation as an instrument of economic policy. It also meant that larger and larger shares of G.N.P. would come to be transacted in foreign currencies, especially dollars. The phenomenal growth of international trade required the use of a transaction currency, and only the dollar had the features to qualify (after the demise, in 1957, of Sterling as a vehicle currency for third parties trade, this predominance of the dollar became a virtual monopoly). In each country, as a result, there grew up an important section of the business community vitally involved in dollar denominated transactions. We must remember that, throughout the 1950's, the dollar remained the only truly convertible currency and that soon only American banks could finance third parties trade in their own currency.

The growing balance of payments deficits, which the U.S. began to experience in the late fifties and early sixties, were instrumental in establishing the dollar as the sole standard

(5) cont'd. US was pushed away from Germany into the Euro-dollar market, from where it probably managed to ultimately penetrate the German defenses. Homogeneous and mutually agreed control measures must therefore be enforced, if we want to achieve non-destablising results. The mere existence of controls at both ends is not enough, if there exists a no-man's land, like the Euro-dollar market, which can be used as a staging post.

for the international monetary system. The U.S. authorities did not want to even consider a parity change, and the same was true of creditor countries. As a result, creditor countries began to accumulate dollar balances, as the U.S. did not want to part with its gold. With the obstinate exception of France, creditor countries became convinced that the dollar was to be considered as being virtually inconvertible into gold.

The Euro-dollar market is reputed to have begun in a substantial way in 1957, when British banks were forbidden to lend Sterling to finance trade among non-Sterling countries. In order not to lose a lucrative business they had been involved in for decades, British banks began to accept dollar deposits, and to lend them to finance international trade. In order to attract those deposits they had to give depositors better terms and higher interest rates than they would be getting from U.S. banks. In so doing, British banks were safe, as American banks could not retaliate. They were prevented from doing so by Reg. Q of the Federal Reserve System, which forbade the payment of interest on deposits of up to 30 days' duration, and placed a ceiling on interest rates payable on deposits of more than 30 days' duration. All that was required, then, was to offer dollar depositors a rate higher than the official ceiling to lure them into transferring their deposits to London ⁽⁶⁾.

(6) The fundamental motivation of American banks opening branches in London was to secure deposits from everywhere for loans to nearly everywhere. The financial mechanism used by the banks has been clearly shown in the law-suit of Bank Melli (Iran) against Chase Manhattan Bank: the large deposit of Bank Melli was in London, without reserve requirement and regulation Q, and whenever the New York balance fell under ten million dollars, funds would be transferred by Chase London to Chase New York. Thus there were dollars in London which were used in this way

It was very soon perceived that this practice, although it momentarily shifted banking business away from American banks, was quite a good way of convincing foreigners to keep their deposits in dollars, thus stopping the U.S. gold drain. Treasury Secretary Dillon expressed exactly this view in a Congressional Hearing as early as 1960. And it was just as soon evident that among the first to take advantage of the new system were minor foreign Central Banks and large multinational corporations, i.e. the large holders of dollars who had no official commitment to support the dollar but could be convinced to hold dollar deposits, albeit in London, if the yield on them was reasonable, i.e. above the rates fixed by Reg. Q.

The fashion initiated by London banks found numerous imitators among European banks and the foreign subsidiaries of large American banks. The market began to grow at very fast rates after the external convertibility of major European currencies was restored and consolidated, and as the growing dollar surpluses accumulated by European countries induced them to relax controls over the international financial activities of their citizens and of their banks. It was very soon realized that accepting Euro-dollar deposits could be a very

(6) cont'd. to make payments in the U.S. Henry Wallich, in "Why the Euromarket needs restraint", Columbia Journal of World Business, Fall 1979, estimated that some 52 billion dollars abroad should have been considered as part of the U.S. stock of money.

There was another important restraint beyond Regulation Q: from 1933 on, under pressure from the banking lobby, it was prohibited to pay interest on demand deposits.

On the origins of the Euro-dollar market a substantial amount has been written. See, for a clear treatment and essential references, G.W. McKenzie, *The Economics of the Euro-dollar System*, London, 1976.

lucrative activity for commercial banks, as, in the practice of European and American banking, such deposits were not subject to minimum reserve requirements. Banks which entered the Euro-dollar business could thus enjoy a substantial competitive edge on banks which did not. Being in the Euro-dollar system also meant that a bank would be well suited to answer the increasingly international demands of large customers, firms engaged in international trade and multinational production.

This was a boon for large banks, both in Europe and in the U.S. In the fifties and early sixties they had been smarting under the competition coming from savings banks, savings and loans associations, insurance companies, which were increasingly encroaching upon large bank territory, while being tied to considerably lower reserve requirements, or to zero reserve requirements. Euro-dollar activity was the large banks' answer to this competition, an answer given under the benevolent eye of the national monetary authorities.

It is important, moreover, to go briefly into a contemporary phenomenon, i.e. the very considerable expansion of American banks overseas, which took place in the 1960's. The growth of American banks' overseas branches is generally attributed to a desire to follow their clients, U.S. multinational corporations, which were at the same time expanding their activities, and to an attempt to stave off European banks' competition in the recently created market for dollar deposits. To these motives, which certainly go a long way

towards explaining the phenomenal overseas expansion of U.S. banks, we must add a less often quoted one, which is in our view equally important ⁽⁷⁾. American large banks, through overseas expansion, carried on a running battle among themselves for a share of the American deposit market, a battle which they had initiated in the late fifties. In the second half of that decade a great spate of take-overs and mergers took place in American banking, which involved most of the top American banks of today. The new competitive configuration that emerged as a result, induced a market uncertainty over market shares and a new desire to justify the mergers through profit maximization. The new mode of "liability management" replaced the old one of "asset management". The latter had relied on security of market shares and risk-minimization. American large banks soon realized that a good way to maximize profits and fight for market shares was to be found in large scale participation in the Euro-dollar market, which was outside the control of both some U.S. monetary authorities. The stampede of U.S. banks into London ended up involving even much smaller banks than the U.S. majors, but it was the latter who, in the early sixties, increased their share of the Euro-dollar market from a negligible percentage to the rough 50% of total transactions which they were supposed to be responsible for in 1961, and which they have managed to hold on to in the following years.

The second half of the sixties and the first half of the seventies have also witnessed the very rapid growth of

(7) This interpretation is offered in M. de Cecco "International Financial Markets and U.S. Domestic Policy since 1945", in International Affairs, 1976.

even more truly "offshore" money markets, located in the Cayman Islands, Hong Kong, the Bahamas, Singapore, etc. From a very small base these markets have now grown to represent about half of total gross Euro-dollar transactions, and they have tended, in the very last years, to grow at a much more rapid rate than "traditional" Euro-market centres. The development of these "truly" offshore markets goes hand-in-hand with the attempt, on the part of central banks in Europe and the U.S., and in particular the Bank of England, to gain some sort of even loose control over Euro-dollar transactions, or at least some sort of monitoring capacity. It is also a result of the changed nature of Euro-dollar transactions, or at least some sort of monitoring capacity. It is also a result of the changed nature of Euro-dollar depositors, from European and Japanese public and private bodies, to oil countries' monetary authorities and private agents. It might not be due to chance that most of these new money centres are former British colonies.

3. There is probably a need to differentiate between the early history of the Euro-dollar market and its development in the late sixties and in the seventies. As we have already noted, the most important source of Euro-dollars, in the early phase of the market, were the Central Banks of creditor countries of Europe and Japan. They were motivated, in putting into the Euro-dollar market a part of the dollars which accrued to their reserves, by a desire to offset probable losses from dollar devaluation through high interest rates (when they acted directly, which, as we saw above, was true only of minor Central

Banks), but especially by a desire to give large banks in their own countries a competitive edge over smaller ones in the fight for banking market shares that raged in most industrial countries throughout the fifties and the sixties, and by the hope that a certain amount of "window dressing" may be possible, in the sense that by lending dollars to their countries' commercial banks, who would re-lend them to the Euro-dollar market, official reserves would accordingly decrease (unless the dollar assets of the commercial banking system were counted as official reserves, as was not the case for quite a considerable time).

In addition, but perhaps sometimes more important than all other motives put together, was the Central Banks' desire to offset the effects of dollar inflows on the domestic credit supply, in an attempt to shy away from the logic of the fixed exchange system, which tends to reduce the difference between individual monetary policies through short-term capital movements. In fact, a large part of responsibility for the creation, and above all, the rapid growth, of the Euro-dollar market must be assigned to the desire of Central Banks to insulate domestic short-term economic policy, and in particular monetary policy, from the neutralizing impact of private international short-term capital flows. This is indeed the old problem, that had induced Keynes, in the 1920's and 1930's, first to discover the interest rate parity theorem and then to devise a forward exchange intervention policy which might insulate domestic interest rate policy from the impact of short-term capital flows. It had finally prompted him to suggest

(together with H.D. White) that a multinational control over such flows be inserted into the I.M.F. Charter, as we saw earlier. Keynes' advice was, however, lost not only on the planners of the postwar monetary system, but also on central bankers who, facing similar problems in the sixties as their predecessors had faced in the twenties and thirties, attempted to solve them by using the Euro-dollar market as the dumping ground for undesired official reserves, and refrained from developing a forward exchange market with enough depth, width, and resiliency to accommodate the very large flows of arbitrage-motivated funds. This would not have done anything to solve that part of the problem represented by straightforward speculators, but would have probably prevented many international traders from turning into occasional currency speculators.

The growth of the Euro-dollar market and its vicissitudes have, however, been chiefly affected by the monetary policies of two Central Banks, the Federal Reserve and the Deutsche Bundesbank. With the exception of the increase in oil prices, the most remarkable events that have been recorded in the market in the last ten years have been due to the often mutually incompatible monetary policies initiated and pursued, solely for domestic purposes, by the U.S. and the German monetary authorities ⁽⁸⁾.

(8) On U.S. and German monetary policies in the late sixties and early seventies, see McKenzie, *l.c.* and the literature he quotes. Also, on U.S. policy see A. Burger, "Report on the U.S.", in M. Monti, ed., *The New Inflation and Monetary Policy*, London, 1976.

The very tight credit squeeze enforced by the F.E.D. in 1969, for instance, led to what was at that time described as the "international interest rates war". For the whole of the 1960's, in fact, U.S. large banks had been using the Euro-dollar market as a source of loanable funds. When Federal Funds rates grew over Euro-dollar rates there was an incentive for U.S. banks to borrow from the Euro-dollar market, and conversely, when the Federal Funds rates went below Euro-dollar rates, they had an incentive to lend to the Euro-dollar market. Because of Reg. Q., U.S. banks could not - as we saw earlier - pay an interest on deposits of less than 30 days' length. This did not apply to funds held in the Euro-dollar market. In addition, under Reg. M., U.S. banks did not have to hold any reserves against funds borrowed from foreign banks which were not their branches.

All these institutional details became of great relevance in 1969. As the F.E.D. tightened credit, the U.S. banks called in reserves from the Euro-dollar market, through their foreign branches. At the end of 1969, total liabilities of U.S. banks to foreign branches stood at about \$13 billion. As late as 1967 they had been less than \$2 billion. This huge inflow of funds from the Euro-dollar market into the U.S. market was, however, obtained at the cost of a phenomenal jump in U.S. (and world) interest rates. Reg. Q ceilings on bank deposits of 90 to 179 days were lifted from 4 to 6%. Prime commercial paper rate rose to 9% in 1969, from 4% in 1967. Euro-dollar rates could only follow suit, as they in fact did, thus spreading the credit squeeze to countries which

perhaps did not have as urgent a need to curb domestic demand as the United States.

It is probable that such harsh measures were required in the U.S. to make monetary policy effective again, after several years of unprecedented increases in the U.S. money supply. Because of the Vietnam War and of the "Great Society" budgetary requirements, the U.S. government was compelled to finance its needs by recourse to the printing press, as it did not want to impose wartime taxes on its citizens (a 10% income surtax was imposed as late as 1968, and that was all). The U.S. had been a country of low monetary growth since the end of the war, perhaps even longer than that. In the mid-sixties this trend was reversed, and the U.S. money supply began to rise at very high rates. This new course could not be reversed in 1969. The U.S. monetary authorities had still got to meet the demands of the government through the printing press. Their monetary policy tried to keep a lot of money flowing while, at the same time, lifting nominal interest rates very high. But, so long as real interest rates remained low or negative, because of price expectations, the boom (and inflation) could not be curbed. Thus, making money expensive for the private sector did not serve its purpose until expectations turned around, as they did in 1970. It is debatable, however, whether this change in expectations was due to the harsh interest rates policy or depended on the decline in military expenditure, and on the rising hopes of peace in Vietnam.

The Nixon Administration, which had imposed the 1969 squeeze, became rather frightened by what it deemed to be its results in 1970. The unemployment rate almost doubled in one year, from 3.6% in 1969 to 6.2% in 1970. A return to cheaper money was therefore considered necessary and, again, was abruptly enforced. At the same time, the tax surcharge was first reduced to 5%, then abolished altogether in July. In June, Reg. Q ceilings on deposits over \$100,000 (between 30 and 90 days) were suspended. This enabled banks to attract funds to lend on to their corporate customers, who were feeling a shortage of liquidity, as they found it difficult to renew their outstanding commercial paper, because of the crisis of confidence engendered by the Penn Central failure. But it also meant that the incentive to borrow from the Euro-dollar market was reduced. But it was not the only measure the U.S. authorities introduced to thwart the successful drive by banks to defy the credit squeeze by attracting Euro-dollar funds. In 1969 Reg. M. was changed, and a 10% reserve requirement was introduced on net borrowing of member banks from their foreign branches, and on assets acquired by foreign branches from their head offices.

While the U.S. authorities embarked upon their reflationary policy, the German authorities, worried by what looked to them as unacceptably high price rises, adopted opposite measures. The Bundesbank raised both Lombard and discount rates, thus opening up a differential with relevant U.S. and Euro-dollar rates, which induced arbitrageurs to shift funds into Germany, and German firms to evade the credit squeeze at

home by borrowing on the Euro-dollar market. Thus a return to easier money in the U.S., accompanied by a tightening of rates in Europe and particularly in Germany, and by U.S. measures directed towards discouraging U.S. banks from borrowing from their branches, gave new impetus to the Euro-dollar market, and increased the outflow of funds, not only from New York into the Euro-dollar market, but also from the dollar into the Deutsche Mark.

This brings us to consider a further determinant of the growth of the Euro-dollar market in the early 1970's : currency speculation. Currency speculation under the Bretton Woods system of fixed but sporadically adjustable parities has been very often described as a game in which Central Banks played the part of lame ducks. As early as March 1940, F.D. Graham noted in his splendid A.E.R. article ⁽⁹⁾ that, under a system of the gold-standard type, as the direction of parity changes could be easily foreseen, speculation was a one-way bet for speculators, and central banks had institutionally to play the part of the matching speculator, who was absent, whenever the reserves of a speculated-against currency fell below a point considered too low by the market's accumulated experience. This game was best played against the authorities as long as parity movements occurred within the limits (the intervention points) fixed by the Bretton Woods agreements. There would be then no risks to the speculators. But it could also be played at a small risk, and with hope of large gains, on the eve of discrete parity changes.

(9) F.D. Graham, "Achille's Heels in Monetary Standards", American Economic Review, March 1940.

It can safely be said that speculators entered the scene en force at the time of the great run on Sterling in 1964. Their numbers increased with the Sterling devaluation of November 1967, and went on rising as that event ushered in a new era of parity readjustments among major currencies. It is reasonable to say that currency speculation reached its acme in 1970-71, and was carried on at the same rate for a significant while in the new age of greater exchange rate flexibility which followed the breakdown of the Bretton Woods system in May 1971, when the Deutsche Mark was floated. Speculative activity, as well as arbitrage, was greatly helped by the existence of the Euro-dollar market, whose growth in turn it fostered. Funds could be "parked" in the Euro-dollar market and then shifted into the appropriate currency at the appropriate time, or they could be used as the collateral needed to go short in currencies about to lose relative value (10).

(10) The massive presence of foreign exchange speculators in the Euro-dollar market has been used by Professor Alan Walters (A. Walters, "Floating Rates. World Liquidity and Inflation" in *Euromoney*, 9, 1973), as the basis for his suggestive explanation of how the Euro-dollar market served to stoke up the fires of price inflation since the demise of the Bretton Woods system. Professor Walters' hypothesis is that the last years of the Bretton Woods system had witnessed the massive appearance of currency speculators, who used the Euro-dollar market as their home base; the inception of flexible exchange rates put an end to one-way phoney speculation, of the sort we have already referred to, and transformed speculation into a high risk activity, with a 50% chance of being wrong in each speculative transaction. Speculators who, according to Walters, were in reality strong risk averters at heart, suddenly found themselves with a lot of unemployed funds, and began to use them as loans to needy countries, or for non-speculative, commercial destinations.

After the quantum jump in oil prices, the ensuing redistribution of international reserves in favour of oil-producing countries meant, first of all, a rather important change in the nature of the international adjustment problem. Basically, it meant that reserves would be pooled in the hands of a few countries which did not possess the economic structure needed to spend these reserves as quickly as would be desirable, in purchases of foreign goods and services. Industrial countries, and non-oil endowed developing countries would, as a result, plunge into very wide balance of payments deficits, as their oil import bills became huge and the recipients of the oil related payments did not manage to spend the money fast enough.

An initiative similar in kind to the Marshall Plan was suggested as the only one capable of coping with the problem. It could not be expected that the oil producers would or even could take that initiative. As a result, the oil funds were channelled into the financial centres which the oil producers had been used to dealing with in the past. At the start, that meant New York and, there, no more than a handful of the largest world commercial banks, upon which the task fell of having to redistribute those deposits to other banks and to final borrowers, which often meant going through the Euro-dollar

(10) cont'd. This greatly increased the pressure on world resources, as countries found it easy to carry on with their inflationary policies, financing their deficits in the Euro-dollar market, and Euro-dollar banks got more and more involved in credit transformation. Hence the jump in world inflation rates in 1972 and 1973. The suggestive Walters hypothesis, which we have just summarized, and will not be able to either prove or falsify, leads us to the most recent phase the Euro-dollar markets have gone through, the post oil-war phase.

market. It also meant a considerable widening of the gap between lending and borrowing terms in the international accounts which had, because of the oil crisis, become structurally imbalanced, and therefore required medium to long-term financing.

The Euro-dollar market (and particularly its prime banking names) was thus resorted to, for the transformation of these short-term deposits into medium and long-term loans, in the absence of any concrete inter-governmental initiative. It was only a matter of months before the markets began to reel under the impact of this huge responsibility. A palliative solution to this problem of private undertaking of "sovereign" risk, was found first of all in adopting a risk-sharing mechanism well known to the international insurance business: when a loan to a government or to a public institution, or to a large private corporation is floated, it is finally taken up by a very wide number of banks, who only take a small amount each of the loan. The terms of the loan are, however, negotiated with the borrower by a few of the participating banks, who perform the role of "leaders", take up large chunks of the loan, and guarantee with their names the quality of the risk undertaken. This solution, however, although it reduces the chances of insolvency for the individual banks, does not reduce the chances of insolvency for the whole market. It also enhances the possibility that "lead" banks become specialists in single risks and thus get locked up in case of major defaults (quite similarly to what happened to Barings

with the Argentine "cedulas" in the 1890's) ⁽¹¹⁾. After a few rather dramatic and well advertised bank failures in late 1974, which made the problem evident to national authorities, the illiquidity problem has been to a certain extent met by an understanding among Central Banks, reached on September 10, 1974, at the Bank for International Settlements. According to it, the Central Banks of the Group of Ten agreed that the Central Bank of the country where foreign branches of banks were domiciled would act as lender of the last resort in case of need. This, of course, meant that the Bank of England had agreed to act in that capacity, having probably secured the support of "Group of Ten" Central Banks, in the case of a serious liquidity crisis. This agreement, however, does not cover that part of the Euro-dollar market which is domiciled in the more truly off-shore money centres and which has lately become the most dynamic. It is not known what major Central Banks would do in case a serious insolvency crisis erupted in one of these centres. While it is almost certain that in the end they would come to the rescue, some doubts can be harboured about the timing and the organization of the rescue operation ⁽¹²⁾.

(11) These considerations are made in M. de Cecco, "New Dimensions for International Lending" in *The World Today*, 1974. The comparison of Euro-dollar loans underwriting methods to those used in the insurance market is also made by Robert Heller, in the evidence he submitted on the Euro-Currency Control Act of 1979 to the House of Representatives Committee on Banking, Finance and Urban Affairs, U.S. Government Printing Office, Serial n. 96-23, Washington, 1979. Heller, however, does not seem to avert the danger that these sorts of arguments represent.

(12) This paper having been written before the "Ambrosiano affair" exploded, I decided to leave the wording of this sentence unchanged.

It is to be noted, however, that more than 50% of total Euro-dollar transactions seemed to be performed, as late as 1975, by the foreign branches of American banks. This is a good reason to believe that the F.E.D., if it decides to do so, is still in a position to come to the rescue in most cases. And this opinion is corroborated by events, like the default of Zaire and the difficulties of Peru, two cases where major U.S. banks found themselves locked in and were helped by the F.E.D.

In the more recent phase, the Euro-dollar market banks also tried to solve the problem of sovereign risk by adopting the I.M.F. as their unofficial leader in large financial transactions with sovereign borrowers. The I.M.F. does not command the funds necessary for these transactions, but it has a well proven (and, to some observers, sometimes perverse) mechanism to assess the credit-worthiness of countries, and to recommend the terms at which money will be lent, i.e. the economic policies the borrowers will undertake to adopt in order to correct their imbalances. A lot of articles have been written to criticise the procedures the I.M.F. adopts, and the so-called "Polak recipe" it prescribes to borrowers, which consists in most cases of the indication of a certain rate of total domestic credit expansion, coupled with devaluation to release output for exports and reduce imports ⁽¹³⁾.

(13) Although it has been attributed to the theoretical articulation of J.J. Polak, who was for many years head of the I.M.F.'s research department, the "Polak recipe" was developed, at the end of the first world war, as a series of conditions which would accompany loans to shore up the currencies of the Hapsburg succession states (Austria, Hungary, Poland). The terms of the loans were suggested by mainly British bankers

In spite of these criticisms, and of the additional one, that the I.M.F. seems capable of imposing its cure only on small countries, the Euro-dollar banks seem to have chosen the I.M.F. as their "international auditors", so that they will feel more comfortable when lending to a country after the I.M.F. has vetted it and has made it accept an I.M.F. loan on conditions agreed with the I.M.F. The periodic reviews of the situation which the I.M.F. also imposes on its borrowers serve as guiding lights to the Euro-dollar market for its own behaviour towards the same borrowers (14).

If we want to sum up the reasons behind the growth of the Euro-dollar market in the last two decades, we have to recall all the benefits accruing from its existence to all interested parties:

1) The U.S. was able to persuade foreigners to hold dollars, albeit outside the U.S., because Euro-banks could pay interest rates higher than those given by banks in the U.S.;

(13) cont'd. and bureaucrats like Norman, Niemeyer, Salter, and were based on the firm belief that Budget Deficits determined inflation and exchange rate depreciation. Bresciani-Turroni graphically described this doctrine as the "Inter-Ally view", its opponents advanced the view that it was exchange depreciation which bred inflation and budget deficits, thus determining a "vicious circle". I have analysed these doctrines, and their modern resuscitation in "Vicious and virtuous circles, the debate in the twenties and in the seventies", a paper presented to the Second Workshop on the German Hyperinflation, held at Berkeley in July 1982, and which will be published in the Proceedings of the Workshop.

(14) Indeed, a large majority of direct I.M.F. loans now go to the developing countries, and particularly to those that seem too poor to get unconditional bank credits. This trend was recently quantified and reviewed with some concern by Rimmer de Vries in Morgan Guarantee's "World Financial Markets", May 1982.

2) Euro-banks could offer higher rates on deposits because they were not tied to compulsory reserve ratios on those deposits and because they paid no corporation tax on offshore business;

3) Non-American monetary authorities could dump unwanted dollars, directly or via their commercial banks, into the Euro-dollar market, thus avoiding, to some extent, revaluation and inflation;

4) Large corporations could use the Euro-dollar market to place their short-term cash most suitably, and later on, to be able to switch from one currency to another, and to hedge themselves against possible exchange fluctuations (especially in view of the poor and limited forward cover facilities available);

5) British banks could continue their traditional international business, when Sterling began to be phased out as an international transaction currency;

6) The monetary authorities of deficit countries could refurbish their reserves in the Euro-dollar market, thus postponing for some time embarrassing applications for I.M.F. assistance;

7) Large commercial banks were allowed, by specialising in Euro-dollar business, to offset the losses of deposits to other banks and financial intermediaries which were, for a time, eroding their market share, in most Western banking systems.

Had the Euro-dollar market not offered so many advantages to so many different types of institutions, it would not have been allowed to grow to such very high figures. European

Central Banks must have certainly considered it a useful set-up; otherwise, they could have let it starve to death in 1969, when the U.S. banks pumped funds from it back to the U.S. market. On the contrary, they fed it very generously on that occasion. Nor did they try to get their funds back in 1970, when the U.S. economy stopped absorbing them. Again, Japanese monetary authorities, in spite of the Central Banks' 1971 agreement not to feed the Euro-dollar market, found it convenient to dump a large part of their dollar holdings there. As a result of these two episodes, the market acquired its mammoth size in the 1970's, and the similar behaviour of oil countries' monetary authorities has kept it growing at an at least equally fast rate since 1973.

4. Attempts to analyse the Euro-dollar market's contribution to money supply inflation have proceeded along the well-trodden paths of monetary theory. The potential the market has for credit creation has, therefore, been scrutinized by using ex post multipliers à la Friedman. Alternatively, a "new view", based on Tobin's portfolio selection has been advanced and, lately, a "net liquidity" approach on the lines of Hicks' famous contribution has been suggested.

It was Milton Friedman himself who proposed, for the study of Euro-dollar credit creation a perfect analogue of a closed banking system, fed by an exogenously determined high-powered money ⁽¹⁵⁾. In his opinion, the magic of the

(15) See his "The Euro-dollar market: some first principles", in Morgan Guarantee Survey, October 1969.

book-keeper's pen is at work in the Euro-dollar market, just as it is in the American commercial banking system, or in any fractional reserve banking system. However, Friedman inserted into his "simile" a very important qualification. He compared the Euro-dollar market to a part of the domestic banking system, as in the case of "Chicago banks" and contrasted it with a system of non-bank financial intermediaries. It is my opinion that all Friedman wanted to point out was the fact that the Euro-dollar market was part of the American banking system, and that the F.E.D. was responsible for its growth, and that he was only marginally interested in showing the credit-creating potential of the system. But his message was read by most to mean that Euro-dollar deposits could multiply *ad infinitum* and, quite contrary to Friedman's intentions, that the Euro-dollar market was a no-man's land, where money could grow at a rate not controlled by any Central Bank.

Accordingly, in order to disprove Friedman's analysis, the objections used by Tobin in his polemic with Friedman were wheeled out again. It was noted, first of all, that the proportion of deposits Euro-banks held as reserves is likely to be small. Fred Klopstock ⁽¹⁶⁾, in asserting that, suggested that a large part of Euro-deposits are not demand deposits and that even in the case of demand deposits, reserves can be borrowed by Euro-banks in case these deposits are withdrawn, just by converting non-dollar assets or by borrowing dollars from American correspondent banks or head offices.

(16) F.H. Klopstock, "Money Creation in the Eurodollar Market", in Review of the Federal Reserve Bank of New York, 52, Jan. 1970.

This line of argument, however, would play into Friedman's hands, as it would reveal the existence in the Euro-dollar market of a large potential for deposit multiplication. Klopstock was therefore quick to add that there was no reason to take the Euro-dollar market as a closed banking system. Only a small proportion of the funds created by Euro-dollar banks would, in fact, return to the Euro-dollar banks. A lot would be deposited in America, thus acting as a de-multiplier of Euro-dollar deposits, and some more would be converted into the currency of the receivers of Euro-dollar loans, thus halting the multiplication process.

Both these arguments, however, can be put to the opposite use. If a Euro-dollar deposit is transformed into an American dollar deposit there is de-multiplication, but this can only point to a danger inherent in the Euro-dollar system, the possibility it lends U.S. monetary authorities to dis-intermediate Euro-dollar banks, only 50% of which are U.S. banks. Even more relevant is the second of Klopstock's arguments. If a Euro-dollar borrower converts his loan into his home currency, his country's Central Bank must refrain from putting the newly acquired dollar deposit back into the Euro-dollar market. Only in that case will the multiplication process come to a halt. We have seen in the previous pages, however, how Central Banks, first the European, then the Japanese, then the oil countries', and all the time those of minor European and underdeveloped countries, were never all at the same time abiding by that rule, which Klopstock requires to belittle the multiplicative potential of the Euro-dollar market. They were, in Klopstock's opinion, the main sources of the Euro-dollar market's prodigious ascent. And, of course, it was Klopstock's

intention to demonstrate that it was foreign Central Banks and not, as surmised by Friedman, the American F.E.D., that had been responsible, with their behaviour, for the Euro-dollar market's growth.

It is thus fair to say that the Euro-dollar market can be capable of very remarkable deposit multiplication, but that the multiplier is, nevertheless, very unstable. It depends on the behaviour of many Central Banks and on that of the borrowers. We must convince ourselves, however, that having proved that the Euro-dollar multiplier is unstable we have discovered a very unpleasant phenomenon. Imagine a credit market which is, to various degrees, controlled by several, rather than by just one, monetary authorities, all quite independently motivated, and one of which is a good deal more powerful than the others. The potential for market instability and for credit multiplication depends on the convergence or divergence of the behaviour of these authorities. If the F.E.D. expands its supply of high-powered money, a part of it will flow to the Euro-dollar market. There the potential for multiplication will depend on other Central Banks' behaviour. If they return the dollar deposits that get into their reserves to the Euro-dollar market, the multiplier will, other things being equal, be very large. If few Central Banks will let the dollars stay in their reserves, and only some will return them to the market, the multiplier will be smaller. On the other hand, if the F.E.D. decides to squeeze its supply of high-powered money, dollars will tend to return to the U.S. and the Euro-dollar market will starve, unless the non-U.S. monetary authorities decide to feed it out of their huge

reserves of dollars, so that high-powered money will come to the Euro-dollar market from non-U.S. official sources. The size of the Euro-dollar market might in this case even remain unchanged. This is a much more important source than an increase in the velocity of circulation of dollars not owned by Central Banks, or than a decrease in the Euro-banks' precautionary reserve levels. Of course, if the U.S. is set on a savage squeeze, a time will come when all dollar reserves of all non-U.S. Central Banks will be exhausted. That time, however, is certainly very far off, and an unthinkable grave squeeze in the U.S. would therefore be needed to starve the Euro-dollar market in spite of the will of non-U.S. Central Banks to keep it alive. The F.E.D. may even be less capable of enforcing such a policy vis-à-vis the Euro-dollar market if we make a further assumption: if we assume that a lot of depositors, in the Euro-dollar market, are multinational corporations, which use the Euro-banks for payments to one another, then the analogue of a closed banking system acquires greater credibility. We all know this assumption is rather excessive, but it might come much less wide of the mark as years go by, the internationalization of production goes on, and the grip of multinationals on world exports becomes firmer than it already is ⁽¹⁷⁾.

(17) In the House Hearings we quoted above, Robert Heller indicated that the Euro-dollar market was to be considered as a "demand" rather than a "supply" determined market, since the Federal Reserve could not determine the supply of Euro-dollars. He notices, but did not stress, the arguments about Central Bank oligopoly we advance here. Quite opposite views on the subject are, on the other hand, expressed by Ronald McKinnon in "Currency Substitution and Instability in the World Dollar Standard" in *American Economic Review*, June, 1982, where he stresses the possibility that the major world Central Banks, by acting as a non-collusive oligopoly, determine uncertainty in the Foreign Exchange Markets, and encourage

We have, thus far, dealt only with the "new view" objections to the stability of the banking multiplier. But if the Euro-dollar multiplier is unstable the fact that it is not very predictable is certainly not very good news to us. We are not using it to predict the impact of changes in the money supply on price changes; we are only trying to become aware of the dangers inherent in an unstable credit system, controlled by an often non-collusive oligopoly of Central Banks. The latter's behaviour can lead the market to very rapid expansion or equally rapid depression. In reality, we have seen that the first instance has been realized much more than the second one, as non-American Central Banks have colluded to offset the restrictive behaviour of the F.E.D., and have also colluded to allow the expansive behaviour of the F.E.D. to have its full effects on the Euro-dollar market.

The Euro-dollar market, however, is not only a market controlled by an oligopoly of Central Banks, it is also a market where a rather small number of very large commercial banks control a large share of total transactions. The small numbers, and large relative shares, of the banks involved, make it possible for the market as a whole to undergo very deep oscillations, due, for instance, to the troubles a few of the protagonists may be having, or to oligopolistic warfare among groups of protagonists. The multiplier may oscillate according to the phases of these fights.

(17) cont'd. huge flows of funds between major currencies, thus inflating and deflating the world money supply. It is much the same reasoning as we develop here, but McKinnon supports it with persuasive data.

If we observe the actual development of the Euro-dollar market, we might come to the conclusion that, in this case, Tobin's objections to the uniqueness of the banking multiplier are more justified than in the case of a closed banking system⁽¹⁸⁾. Other financial intermediaries, in a closed system, cannot, in most cases, hold their reserves in any other form than bank deposits, thus not being able to put a stop to bank credit expansion. In the case of the Euro-dollar market, however, if non-U.S. Central Banks do not feed back the dollars they receive, the Euro-dollar multiplication potential is very substantially reduced. There can be, unlike the case of a closed system, real leakages.

It should be noted that, in order for Tobin's view to hold, there should be an only partial commercial banks' monopoly of money creation. If bank deposits are almost universally used as money, Tobin's objections meet with difficulties. But if we live in a world where coin, State Notes, and bank deposits coexist as means of payment, Tobin's objections to the banking multiplier are theoretically reasonable. Non-bank financial intermediaries can then receive the savers' money and keep it in safes or elsewhere, or lend it to people who only partly transform it into bank deposits. Then, relative yields will be very important in influencing liquidity preference, and the banking multiplier can be highly unstable.

Now, it seems to me that the Euro-dollar market can be fruitfully likened to such a monetary system. Dollars can be held by non-Americans at banks in the U.S., and elsewhere, depending on interest rates. Dollars held elsewhere

(18) See J. Tobin "Commercial Banks as Creators of Money" in D. Carson, ed., *Banking and Monetary Studies*, Homewood, 1963.

can be borrowed by people who can transform them into other currencies. Central Banks will receive these dollars and have to make up their minds whether to keep them off or put them back into the Euro-dollar market. Also, dollars held by foreigners outside the U.S. can be lent by Euro-dollar banks to borrowers who will bring them back to the U.S.

Interest rates, exchange rates, and expectations on both, enter the stage as soon as Euro-dollars come into existence. We saw very early on how the market could not have got started without the existence of interest rate differentials. Expected parity changes in the major currencies were responsible for just as large a part of the increase in its size.

The fact, however, that the "new view" may be more relevant to the Euro-dollar market than the "old view" does not mean that we shall get much further if we try to be eclectic and estimate the Euro-dollar market's potential for credit multiplication just by inserting interest differentials into a traditional multiplier. This was done by A. Swoboda ⁽¹⁹⁾, but in order to get a manageable formula, he had to sacrifice a lot of the options the actual Euro-dollar market offers. The value of his results was thus reduced by the simplifications, as G.W. McKenzie has aptly pointed out. Swoboda assumed that the number of banks involved in passing to each other a fraction of an initial Euro-dollar deposit was fixed. But this is not necessarily true. Furthermore, he assumed that the fraction re-deposited

(19) A.K. Swoboda, *The Eurodollar Market, an Interpretation*, Princeton, 1963.

by banks with other Euro-banks was fixed; and this again is a variable, depending on each bank's liquidity preference at any time. Lastly, he assumed that the fraction re-deposited by non-bank borrowers was fixed, and that, as well, is a variable, depending upon the portfolio preferences of each depositor at any time.

More recently Hewson and Sakakibara ⁽²⁰⁾ have improved upon Swoboda's earlier effort, and produced a model of the Euro-dollar market which tries to take into account the portfolio behaviour of borrowers and lenders of Euro-dollars. However, they assume that domestic interest rates in countries that "border" on the Euro-dollar market are fixed, and that there is no conversion of assets from dollars into other currencies.

The most recent contribution in this field comes from M. Villani, an economist with the Banca d'Italia. In an unpublished paper, he sets out to provide a model of the Euro-dollar market which may take stock of the important institutional changes the market has undergone since the oil crisis and that may be based on the Hicksian concept of net liquidity.

Mr. Villani correctly notes that a large part of the Euro-dollar market has come to be composed, in the years since the oil shock, of deposits by oil producers, which have as their main feature their very short life span, and of variable interest rate, medium-term, loans to deficit countries. This

(20) J. Hewson and E. Sakakibara, "The Eurodollar Multiplier, a 'Portfolio' Approach", in I.M.F. Staff Papers, March 1975.

is an important change from what happened in the same market before oil producers became the main depositors and deficit countries the most important borrowers. Euro-dollar banks have had the task of transforming these liquid deposits into less and less liquid loans.

The approach taken by Villani to the problem is very similar to that taken by Hewson and Niehans in a joint article ⁽²¹⁾. They begin from Hewson's realization, contained in an earlier contribution, that the essence of the problem of the Euro-dollar multiplicative mechanism is very similar to what makes the difference between banks and other financial intermediaries, a source of heated debate in the 1950's and 1960's among Friedman, Gurley and Shaw, Tobin, and others. Hewson and Niehans then proceed to formalise their acceptance of the Gurley and Shaw approach, which is itself a formalisation of the Hicksian "Suggestion for simplifying the theory of money". The core of that approach, however, is the description of a financial system whose main feature is "inside" rather than "outside" money, i.e. money which is somebody's debt and somebody else's credit. As is known, this is an approach Harry Johnson attributed to Keynes as well, and its crucial assumption is that the debtor's borrowing capacity is diminished by each sum he borrows. Now, this is certainly not a valid assumption to make when dealing with present day financial systems, where the arch-borrower, the State, is in no way (until the extremes of inflation have been reached), deterred from further borrowing by the outstanding stock of his previous borrowing. In fact, if the

(21) J. Hewson and J. Niehans, "The Eurodollar Market and Monetary Theory", in Journal of Money, Credit and Banking, Jan. 1976

State authorities realise that, by spending the money borrowed, they contribute to raise the general price level, they might very well step up their borrowing and expenditure, in order to raise prices and thus decrease the real value of the stock of government debt. Because of this generalised fact of life, it has been suggested by Friedman and others that an "outside" money assumption is preferable, when dealing with actual modern monetary systems.

Obviously, this is a rather heavy limitation, that Hewson and Niehans, and Villani with them, must face, to the euristic value of their analytical findings. When dealing with the Euro-dollar market we cannot forget one of the definitional truths of a Gold-Exchange Standard, as the one which prevailed since the war undoubtedly was: that the country providing the standard was free from balance of payments problems exactly because all other countries accepted its money as international liquidity. And this basic rule seems to have been quite closely respected by the U.S. and the other countries. The fact that all others had to accept dollars in their reserves no matter at what rate the U.S. determined to put them into the market is exactly, as we saw earlier, one of the causes of the rise of the Euro-dollar market. The rise of the Euro-dollar market can be seen as an attempt to have a cake and eat it, but we cannot infer that the postwar international monetary system can be depicted as one working on "inside" money.

Having made clear this rather important shortcoming of models of the Euro-dollar market based on "inside" money assumptions, we can then proceed to see how, by using a "net liquidity" concept, in opposition to the one of "gross liquidity" used by Hewson and Niehans, Villani comes to the conclusion that the Euro-dollar market has not functioned solely as a distributor of liquidity, as Hewson and Niehans suggested, but rather as a source of net liquidity to the world economic system.

It should be clear by now that we ought to nurture a healthy disrespect for these attempts to quantify the multiplicative potential and the actual credit creation of the Euro-dollar market. This scepticism should not involve the analytical efforts that have yielded the quantitative results we question, for they command our respect. But we must not refrain from noting that, according to which of the studies we believe, the Euro-dollar multiplier can have a value lower than one or much above one. It should therefore be advisable to use these studies for the insight they offer into the problem, rather than for the quantitative solutions they provide.

There is, however, a side to the problem which seems to have been overlooked in the literature ²²⁾. The Euro-dollar market, in all its almost twenty years of life, has represented a steady and marked re-privatization of the

(22) Among the very few people who have considered this point we can count Governor Henry C. Wallich, in his Statement before the Committees on Domestic Monetary Policy and on International Trade, Investment and Monetary Policy of the House Committee on Banking, Finance and Urban Affairs, July 12, 1979.

international financial system, and of international capital flows, which had been subjected to heavy controls in the previous twenty years. Even the behaviour of Central Banks, when they operate in this market, is very similar to that of private actors. But, in parallel with this re-privatization, a very impressive internationalization of production has occurred, which has involved the very largest corporations. It is probable that, as a result of the latter phenomenon, a very important share of world trade is now effected by multinationals, and also that the degree of concentration in world production and sales has increased. If this is the case, the ability to control prices, on the part of the producing firms, has increased accordingly.

It is not too far fetched to think that the Euro-banks have come to cater to the financial needs of multinational corporations, and that this is an important part of their total activities. If the Euro-dollar market is capable, as it seems, even only of substituting itself to a large, and growing, share of domestic credit markets, the fact that Euro-banks tend to accomodate preferably very large non-financial corporations means that these corporations have found in the Euro-dollar market a source of credit larger perhaps than what they would have at their disposal in the case where the Euro-dollar market did not exist, but certainly not affected by domestic credit controls. In other words, if this is true, the Euro-dollar market has meant a redistribution of credit

from the small to the large corporations and it has enabled the latter to ride over great domestic credit squeezes with only negligible effects to their actual borrowing levels. Credit squeezes, as a result, have come to affect, even more than before, small business exclusively, while big business has been put in a position to ignore them.

Permanent credit availability, as that offered by the Euro-dollar market, has allowed large corporations to expand free from financial fetters, thus escaping from the clutches of the stop-go policies that have characterized most western domestic credit markets in this period (23).

Moreover, as it is known that one of the main features of the Euro-dollar market is the low spread between deposit and lending rates, Euro-dollar customers usually get better terms than they would in the domestic credit markets. Therefore, we may say that the growth of the Euro-dollar market has redistributed world credit in favour of that part of the business community which is in a position to control (and raise) prices, and has also given them a further edge on similar companies. It has thus encouraged the drive towards concentration and non-competitive control over the price mechanism.

(23) Indeed, this structural transformation of the credit markets which the Euro-dollar system permitted has been used by Albert Vojnilover as the basis for his supply-determined interpretation of postwar U.S. financial history, which he developed in his "Central Role of Credit Crunches in Recent U.S. Institutional History", Brookings Papers in Economic Activity, 2, 1980.

This is probably as important a consideration as any that are made on the role of the Euro-dollar market. The redistributive role played by the Euro-dollar market, in fact, might have accelerated the source of world inflation more than any mechanism more closely related to monetarist explanations of the inflationary process. However, in this case, just as in those previously considered, we cannot advance beyond the stage of suggestion and intuition.

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